

YERSHOV, L.V. (Moskva)

Making allowance for Baushchinger's effect on the stability of a  
compressed strip. Prikl. mat. i mekh. 26 no.3:577-579 My-Je  
'62. (MIRA 16:5)

(Plasticity) (Deformations (Mechanics))

YERSHOV, L.V.

Formulation of the problem of the stability of mine workings.  
Dokl. AN SSSR 143 no.2:305-307 Mr '62. (MIRA 15:3)

1. Moskovskiy gornyy institut. Predstavleno akademikom  
A.Yu.Ishlinskim.

(Mechanics, Analytic)  
(Mining engineering)

YERSHOV, L.V. (Moskva)

Artificial strengthening of block stability by setting  
reinforcing rods. Izv. AN SSSR Otd. tekhn. nauk. Mekh. 1  
mashinostr. no.2:180-182 Mr-Ap '63. (MIRA 16:6)

(Mine timbering).

YERSHOV, L.V. [Iershov, L.V.] (Moskva)

Investigating problems of the manifestations of rock pressure  
from the standpoint of the theory of elasticity of elasto-  
plastic solids. Prikl. mekh. 9 no.4:387-397 '63.  
(MIRA 16:8)

1. Moskovskiy institut radioelektroniki i gornoy elektroniki.

YERSHOV, L.V.; ZALMANZON, Ya.S.

Design of a gas burner for heating boilers. Gaz. prom. 7 no.4:  
18-22 '62. (MIRA 17:7)

FEDOTOVA, Dina Emmanuilovna; YERSHOV, Lepad Viktorovich

[Computers and programming] Matematicheskie mashiny i  
programirovanie. Moskva, In-t radioelektroniki i gor-  
noi elektromekhaniki. No.2. 1964. 36 p.  
(MIRA 18:8)

YERSHOV, L.V., inzh.; LISIN, A.A., inzh.

Possibilities for improving the operation of fuel bunkers.  
Teploenergetika 11 no.11:44-47 N '64. (MIRA 17:12)

1. Ivanovskiy energeticheskiy institut.

YERSHOV, L.V., inzh.; LISIN, A.A., inzh.

Stand tests of bunker pillows and corner-type knock down devices. Elek.  
sta. 35 no.9:27-28 S '64. (MIRA 18:1)



YERSHOV, L.V.; KALUZHN, A.A.

Stability of strip subjected to compression. Izv. AN SSSR.  
Mekh. no.4:152-153 J1-Ag '65.

(MIRA 18:12)

YERSHOV, L.V.

Manifestations of rock pressure in horizontal workings. Dokl.AN  
SSSR 145 no.2:298-300 J1 '62. (MIRA 15:7)

1. Moskovskiy gornyy institut. Predstavleno akademikom A.Yu.  
Ishlinskiy.

(Rock pressure)

1. YERSHOV, M.
2. USSR (600)
4. Stock and Stockbreeding
7. Nutrition and livestock breeding in the U. S. S. R. Sots. vest. 32. no. 8: Ag '52

9. Monthly List of Russian Accessions. Library of Congress, Feb. 1953. Unclassified.

BURCHAKOV, Anatoliy Semenovich; MOSKALENKO, Eduard Mikhaylovich;  
YERSHOV, L.V., otv. red.

[Aerosol dynamics in mines] Dinamika aerorozlei v gornnykh  
vyrabotkakh. Moskva, Nauka, 1965. 66 p. (MIRA 18:11)

1. YERSHOV, M. F.

2. USSR (600)

4. Magnoliavine - Kuybyshev Province

7. Chinese magnoliavine in Kuybyshev Province, Les. khoz., 6, no. 3, 1953.

9. Monthly List of Russian Accessions, Library of Congress, April 1953, Uncl.

YERSHOV, M. F.

YERSHOV, M. F.--"Investigation of the Pollen-Retaining Properties of Leaves of Certain Forest Plants." Acad Sci USSR. Botanical Inst imeni V. L. Komarov. Leningrad, 1955. (Dissertation for the Degree of Candidate in Biological Sciences).

SO. Knizhanay letopis'  
No 2, 1956.

YERSHOV, M.F.,

Effect of the age of tree leaves on their dust-retaining  
properties. Gig. i san. no.10:44 O '55. (MLRA 9:1)  
(LEAVES) (DUST)

YERSHOV, M.F.

Acclimatization of trees and shrubs in kinel', Kuybyshev Province.  
Biul.Glav.Bot.sada no.22:25-27 '55. (MLRA 9:5)

1. Dendrologicheskiy sad Kuybyshevskogo inzhenerno-meliorativnogo  
instituta.

(Kinel'--Acclimatization (Plants))



YERSHOV, M.F.

Effect of the height of tree leaves on their dust retaining  
properties. Gig. i san. 21 no.11:93 N '56. (MLRA 10:2)  
(LEAVES) (DUST)

Country : USSR

Category: Cultivated Plants. Fruit. Berries.

M

Iss Jour: RZhDiol., No 11, 1958, No 49138

Author : Yershov, M. F.

Inst : Kuybyshev Agricultural Inst.

Title : Geographic Forms of Common Seabuckthorn (*Hippophal rhamnoides*) in Cultivation.

Orig Pub: Izv. Kuybyshevsk. s.-kh. in-ta, 1957, 12, 153-157

Abstract: Experimental sowings of seeds of various geographic origins (Labinsk in Caucasus, Ulan-Edo, Alma-Ata) were carried out at the Kuybyshevskiy Institute of Agriculture in 1952. The obtained plants are distinguished by substantial morphological peculiarities and different height, and also by sharply expressed

Card : 1/2

Country : USSR

Category: Cultivated Plants. Fruit. Berries.

M

Abn Jour: RZhBiol., No 11, 1958, No 49138

biological differences: different length of vegetation period (from 146 days for Siberian form to 177 days for Caucasian), different frost and drought resistance. In accordance with the aggregate of these characteristics, the Caucasian form is recommended for the Trans-Volga districts (with selection, in the future, of frost-resistant plants in nurseries). The Siberian form is recommended in more humid localities. -- I.A. Dashkirov

Card : 2/2

M-174

*Ershov, M.F.*

USSR/Plant Physiology - Photosynthesis.

I-1

Abs Jour : Ref Zhur - Biol., No 5, 1958, 19913

Author : Ershov, M.F.

Inst : -

Title : On the Photosynthesis of Clear and Dusty Leaves of  
Fine-Leaf Linden-Tree and Small-Leaf Elm.

Orig Pub : Dokl. AN SSSR, 1957, 112, No 6, 1136-1138

Abstract : The study of photosynthesis of clean and dusty leaves of the linden and elm trees was carried out under natural conditions in Kyubyshev by the method of using half branches, not separated from the plants. In summer the depressing action of dust photosynthesis was due to the change in the temperature of the leaves. The dark color of carbonaceous particles aiding in the absorption of heat energy caused the overheating of the leaves. In the fall photosynthesis depression in the dusty leaves was due, apparently, to lack of light retained by the layer of dust.

Card 1/1

COUNTRY : USSR X  
 CATEGORY : Forestry. Dendrology.  
 ABS. JOUR. : RZhBiol., No. 4, 1959, No. 15477  
 AUTHOR : Yereshov, M.F.  
 INST. : Kuybyshev Agric. Inst.  
 TITLE : Dendrological Garden of Kuybyshev Agricultural Institute.  
 ORIG. PUB. : Izv. Kuybyshevsk. s.-kh. in-ta, 1958, 13, 215-220  
 ABSTRACT : The garden, which is located on the lower river terrace of the Kinel' river, is described, and the reaction of a number of exotic species to extreme temperatures is determined. The predominance of leafy varieties was related to unfavorable soil conditions in the garden. The most interesting American species, which proved to be very resistant to dryness in the garden environment, are enumerated; the species of Middle Asia were grown successfully. -- L.V. Nesmelov

Card: 1/1

YERSHOV, M.F.

Effect of dust on plant growth. Bot.zhur. 44 no.6:822-824  
Je '59. (MIRA 12:11)

1. Kuybyshevskiy sel'skokhozyaystvennyy institut.  
(Plants, Effect of dust on)

YERSHOV, M.G.

30361

Osvoyeniye novykh pryessov nyepriyernogo deystviya. (Masloboyno - zhifrovaya prom-st')  
Pishch. prom-st' SSSR, vyp. 13, 1949, s.54-56

SO: LETCPIS' No. 34

1. YERSHOV, M. G., Eng.
2. USSR (600)
4. Evaporating Appliances
7. Use of vacuum in condensers and screw evaporators of oil factories, Masl. zhir. prom., 17, No. 7, 1952.

9. Monthly List of Russian Accessions, Library of Congress, February 1953. Unclassified.



YERSHOV, M. G., Eng.

Heat Engineering

Utilization of heat in the steam boiler room. Masl. -zhir. prom. 18,  
No. 3, 1953.

Monthly List of Russian Accessions, Library of Congress, June 1953. Incl.

YERSHOV, M.G., inzhener.

Operations of the Millerovo oil extracting plant. Masl. -zhir.  
prom. 19 no.2: 32-33 '54. (MLRA 7:4)

1. Millerovskiy masloekstraktsionnyy zavod.  
(Sunflower seed oil)

YERSHOV, M.G., inzhener.

Work practice of the hulling and separating section of the  
Millerovo Oil Plant. Masl.-shir.prem. 19 no.6:26-27 "54.  
(MLBA 7:10)

1. Millerovskiy maslozavod.  
(Oilseeds) (Extraction apparatus)

**YERSHOW, M.G.**

**Vertical bucket excavator ensures the production of coal with low  
oil content. Masl.-shir.prem.21 no.5:27-29 '56. (MLRA 9:10)**

**1.Millerevskiy Masloekstraktsionny saved.  
(Oil industries--Equipment and supplies)**

YERSHOV, M.G.

Processing corn embryos. Masl.-zhir. prem. 23 no.2 '57.

(MIR: 10:4)

1. Millerovskiy masloekstraktsionnyy zavod.  
(Corn (Maize))

~~YERSEY, M. G., inzh.~~

Second remodeling of the vertical bucket extractor. Masl.-zhir.  
prom. 24 no.10:28-30 '58. (MFA 11:10)

1. Millerovskiy masloekstraktsionnyy zavod.  
(Extraction apparatus)

ZOTOV, Mikhail Nikolayevich; YEFREMOVICH, Boris Arsent'yevich;  
YERSHOV, Mikhail Vasil'yevich; BRONFIN, M.S., inzh.,  
retsensent; KLOCHKOV, V.I., inzh., retsensent; KOROTKOV,  
V.N., inzh., red.; KHITROVA, N.A., tekhn. red.

[Working principle and operation of automatic battery-  
powered loaders] Ustroistvo i ekspluatatsiya akkumulyatornykh  
avtopogruzchikov. Moskva, Vses. izdatel'sko-poligr. ob"edi-  
nenie M-va putei soobshchenia, 1962. 77 p. (MIRA 15:4)  
(Loading and unloading---Equipment and supplies)

YERSHOV, N., vrach

Let's introduce a sickness chart. Okhr.truda i sots.strakh.  
no.1:59 Ja '60. (HIRA 13:5)  
(Medical records)



YERSHOV, Nikolay.

Power of the collective. Sev.profsoiuzy 4 no.8:43-44 Ag '56.  
(MIRA 9:10)

1.Gruppevoy organizator professional'nogo soyuza brigady plotnikov stroitel'nogo upravleniya no.4 g.Novokuybyshevska.  
(Novokuybyshevsk--Construction industry)

YERSHOV, N.

Greater attention to work organization. Rech. transp. 22  
no.5:50 My '63. (MIRA 16:8)

1. Nachal'nik otдела truda i zarabotnoy platy Cherepovetskogo  
sudostroitel'nogo i sudoremontnogo zavoda.  
(Inland water transportation)

YERSHOV, N., inzh.

Industrial management without divisional shops. Rech. transp. 19  
no. 2:44-45 F '60. (MIRA 14:5)

1. Cherepovetskiy sudoremontno-sudostroitel'nyy zavod.  
(Factory management) (Cherepovets—Ships—Maintenance and repair)

YERSHOV, N.; OREKHOVA, K.

If you do not study you are not a progressive worker. Grazhd.av.  
18 no.12:19-20 D '61. (MIRA 15:1)  
(Aeronautics, Commerical--Study and teaching)

RUPASOV, G.; YERSHOV, N.

Future of new deposits is on the agenda. MTO 5 no.2:54 P '63.  
(MIRA 16:3)

1. Zamestitel' predsedatelya Tsentral'nogo pravleniya nauchno-  
tekhnicheskogo gornogo obshchestva (for Rupasov). 2. Uchenyy  
sekretar' organizatsionnogo komiteta Vsesoyuznogo soveshchaniya po  
osvoyeniyu mestorozhdeniy poleznykh iskopayemykh (for Yershov).  
(Mines and mineral resources)

L 22823-66 ENT(a)/T DJ

ACC NR: AP6009026 (A) SOURCE CODE: UR/0340/65/000/011/0016/0016

AUTHOR: Yerzhov, N. (Expert)

ORG: All-Union Association "Soyuzsel'khoztekhnika" (Vsesoyuznoye ob'yedineniye "Soyuzsel'khoztekhnika").

TITLE: Strict quality control of petroleum products

SOURCE: Sel'skiy mekhanizator, no. 11, 1965, 16

TOPIC TAGS: petroleum product, laboratory equipment

ABSTRACT: Two portable laboratory sets for testing petroleum products are described. The laboratory sets were produced (since 1964) by the "Soyuzsel'khoztekhnika" for various field services in agriculture. They are of PL-2M and RL types. The PL-2M type represents a cabinet divided in 26 sections and equipped with deep door shelves. Chemical reagents, instruments and utensils are carefully packed and fastened on shelves and in drawers. Each cabinet is provided with a list of articles. The RL type is made in the form of a chest with a

Card 1/2

L 22828-66

ACC NR: AP6009026

hinged lid. The articles needed for chemical analysis are also well secured and attached inside the chest. These portable laboratories are used for measuring fuel density, contents of water, acids, alcahis and impurities as well as the viscosities of oil and lubricants. Orig. art. has: 2 photos.

SUB CODE: 11, 07 / SUBM DATE: None / ORIG REF: 000 / OTH REF: 000

Card

2/2

21.6000

27702

S/120/61/000/003/012/041

E202/E135

AUTHORS: Sidorenko, V.V., Ivanov, V.P., and Yershov, N.A.

TITLE: Universal recording dosimeter

PERIODICAL: Priory i tekhnika eksperimenta, 1961, No.3, pp.78-81

TEXT: A particularly robust and economical, transistorized gamma-dosimeter is described. This instrument is designed specially for the continuous monitoring of radioactivity in the sewers and other not easily accessible ducts. The probe which houses one or two G.M. tubes is made of chromium plated steel tube but may also be made of plexiglass if the beta count is required. A cable, which in some cases may be over 100 m long, joins the probe with the box housing the energising, amplifying and registering circuits. The dosimeter registers within the range of 0.002-200 r/hr. In the case of using a thin-walled probe which is intended for a maximum working depth of 20 m, a sensitivity of 0.2 mr/hr is claimed. The negative impulses from the G.M. tubes are amplified in a two-stage voltage amplifier followed by a normalizing circuit of a blocking generator. The standard instrument carries a microammeter but provision is made for the

Card 1/2



--27702

S/120/61/000/003/012/041  
E202/E135

Universal recording dosimeter

inclusion of a self-recording instrument. The total power requirements are approximately 150 mw, which with the standard two supplying batteries of 18 v each, gives a working life of about 400 hours.  
There are 4 figures.

SUBMITTED: June 22, 1960

Card 2/2

L 7000-66 EWT(1)/EWA(h) GW

ACC NR: AP5026789

SOURCE CODE: UR/C286/66/000/017/C073/0073

AUTHOR: Keyshtadt, N. N.; Gaisin, L. N.; Yershov, N. A.; Hazanova, Z. V.

ORG: none

TITLE: A device for locating useful minerals. Class 42, No. 174380 (announced by All-Union Scientific Research Institute of Prospecting Methods and Techniques (Vsesoyuznyy nauchno-issledovatel'skiy institut metodiki i tekhniki razvedki))

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 17, 1965, 73

TOPIC TAGS: electronic measurement, mineralogy, piezoelectric property, seismic prospecting

ABSTRACT: This Author's Certificate introduces a device for locating useful minerals. The instrument contains sources of elastic vibrations and seismic signal pickups. Measurement accuracy in locating minerals with piezoelectric properties is improved by using receivers of electromagnetic oscillations made in the form of metal pins, amplifiers with differential symmetric inputs, and a recorder synchronized with the seismic signal pickup.

UDC: 550.340.19

Card 1/2

L 7000-66

ACC NR: AP5026709



Fig. 1. 1--receiver of electromagnetic oscillations; 2--amplifiers; 3--recorder

SUB CODE: ES,EC/

SUBM DATE: 02Nov63/

ORIG REF: 000/

OTH REF: 000

KW  
Card 2/2

YERSHOV, N.F., aspirant

Some problems in the economy of feed production on collective  
and state farms of West Kazakhstan Province. Zhivotnovodstvo  
21 no.9:30-35 S '59. (MIRA 13:1)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut kormov imeni  
V.R.Vil'yamsa.  
(West Kazakhstan Province--Feeds)

1. YERSHOV, N.F. (Engineer)
2. USSR (600)
4. Steel, structural.
7. Limited state calculations of steel constructions; Stroi, prom 30 No. 6 1952.
9. Monthly List of Russian Accessions, Library of Congress, August 1952, Unclassified.

YERSHOV, N., inzhener.

Thickness distribution of main longitudinal braces on an equivalent stringer.  
Mor.1 rech.flot 13 no.2:23-25 Je '53. (MLRA 6:8)

1. OIIMF.

(Naval architecture)

124-57-1-1126

Translation from: Referativnyy zhurnal, Mekhanika, 1957, Nr 1, p 156 (USSR)

AUTHOR: Yershov, N. F.

TITLE: Determination of the Limit Loading of the Plating of a Ship  
(Opredeleniye predel'noy nagruzki obshivki sudna)

PERIODICAL: Nauch. tr. Odessk. in-ta inzh. mor. flota, 1954 (1955),  
Nr 11, pp 41-51

ABSTRACT: A method is offered for the determination of the limit loading of the plating of a ship as a sheet-beam, wherein the existence in the plating of residual strains is specified, without however any examination of the work of the plating within the range of plastic deformation. The transverse limit loading without reinforcement is determined by equating the magnitude of the bending moment in the critical section of the sheet-beam which is subjected to the action of the transverse load and a tensile force according to the well-known solution ref. Pankovich, P. F., Stroitel'naya mekhanika korablya, ch. II (The Structural Mechanics of the Ship, Part II), Sudpromgiz, 1941 to the magnitude of the limit bending moment in the presence of the axial forces which would produce the limit stress in the material

Card 1/2

124-57-1-1126

Determination of the Limit Loading of the Plating of a Ship (cont.)

in the absence of any reinforcement whereby the creep limit stress is attained throughout the entire section. The formulas obtained are utilized to calculate the magnitudes of the axial forces which correspond to the limit state of the material in the absence of any reinforcements, also the limit transverse loadings in terms of the spacing and the thickness of the plating. Graphs are constructed from the results of the computation, whereby the limit loading without reinforcement can be found directly for given values of the spacing and the thickness of the plating. The calculations show that, in the computation of the limit loading without reinforcement of the plating of the less strong types of ships, such as lumber carriers, tankers, and small ships for Arctic navigation, consideration of the effect of an axial force is indispensable, whereas consideration of that effect is not required for the plating of icebreakers.

1. Ship plates--Stresses--Mathematical analysis

B. I. Slepov

Card 2/2



YERSHOV, N.

YERSHOV, N., kandidat tekhnicheskikh nauk.

Problem of calculating the strength of ship construction.

Mor. i rech.flet 14 no.6:19-21 Je '54.  
(Shipbuilding)

(MLBA 7:7)





YERSHOV, N.F. (Gor'kiy)

Designing compressed members with elements of various  
rigidity according to limiting conditions. Stroimekh. i  
rasch.soor. 2 no.1:30-34 '60. (MIRA 13:6)  
(Elastic rods and wires)

YERSHOV, N.F., kand.tekhn.nauk

Critical moment of ship hulls with a transverse system  
of frame construction. Sudostroenie 26 no.6:12-15  
Je '60. (MIRA 13:7)  
(Hulls (Naval architecture))

S/879/62/000/000/058,088  
3234/3308

AUTHOR: Yershev, N. P. (Gor'kiy)

TITLE: Postcritical elastic-plastic work of plates

SOURCE: Teoriya plastin i obolochek; trudy II Vsesoyuznoy konferentsii, L'vov, 15-21 sentyabrya 1961 g. Kiev, Izd-vo AN USSR, 1962, 344-346

TEXT: The author gives a solution for a rectangular plate with hinged edges, compressed in the  $x$  direction. The equations of Yu. R. Lepik are simplified by assuming  $\Omega$  and  $\Omega^{*}$  to depend on  $x$  only, and  $\Omega^*$  to be constant. The final system of design equations is given.

Card 1/1

0234/2004

AUTHOR: Yershev, N.F.

TITLE: Elastic-plastic bending of plates with large deflections

PERIODICAL: Referativnyy zhurnal, Mekhanika, no. 3, 1963, 25, abstract 2V170 (Soviet. mekhan. i raschet skoruzh. no. 3, 1962, 1-6)

TEXT: Equations for flexible elastic-plastic plates of constant thickness, deduced by Yu.R. Lepik (Inzhenernyy sbornik, v. 24, 1956, 37-51-RZhMekh. no. 9, 1957, 10856) are extended to the case of an initial curvature. Since it is difficult to satisfy these equations precisely, several simplifications are made, e.g. the value of the modulus  $\omega = 1 - \sigma_1/E\epsilon_1$  is calculated from the appropriate formula ( $E_n$  being the modulus of strengthening,  $\eta$  the distance of the zone of plastic deformations from the neutral surface)

$$\omega = (1 - E_n/E)(1 - \eta/2)$$

Card 1/2

Elastic-plastic ...

S/124/63/000/002/035/052  
D234/D30B

The assumptions make the equation of compatibility coincide with the corresponding equation of the theory of flexible elastic plates, which is also satisfied by the equation of equilibrium. A solution is obtained for a rectangular plate, with hinged edges, compressed in one direction. It is assumed that the edges do not become curved in the process of deformation. The problem is solved by the Bubnov-Galerkin method, the deflection being assumed in the form

$$w = f \sin \pi x/a \sin \pi y/b$$

Results of calculations indicate that the resistance of the plate decreases with appearance of plastic deformations. This decrease is usually gradual as plastic deformations accumulate; however, in the case of plates whose Euler stresses are close to the yield stress of the material, the resistance can also change discontinuously.

[Abstractor's note: Complete translation]

Card 2/2



YERSHOV, N.F. [Iershov, M.F.] (Gor'kiy)

Equilibrium of flexible elastoplastic shells and plates. Prikl.-  
mekh. 8 no.5:489-499 '62. (MIRA 15:9)

1. Gor'kovskiy politekhnicheskii institut.  
(Elastic plates and shells)

YERSHOV, N.F., kand.tekhn.nauk, dotsent

Strength of bottom plates. Trudy GSI no.30:77-97 '61.  
(MIRA 16:9)

YERSHOV, N.F. [Ierashov, M.F.] (Gor'kiy)

Elastoplastic calculation of plates with braces. *Prykl. mekh.*  
9 no.6:592-600 '63. (MIRA 16:12)

1. Gor'kovskiy politekhnicheskii institut.

YERSHOV, N.F., kand. tekhn. nauk

Investigating flat elastic-plastic deformations of thin plates.  
Trudy GPl 19 no.2:77-84 '63. (MIRA 17:10,

YERSHOV, N.F. (Gor'kiy)

A method for analyzing the elastoplastic state of plates.  
Prikl. mekh. 1 no.8:47-56 '65. (MIRA 18:9)

1. Gor'kovskiy politekhnicheskii institut.

ERSHOV, N. I.

ERSHOV, N. I.

Osushenie aerodromov. Proektirovanie i raschet. Leningrad, 1948.  
Title tr.: Airfield drainage. Planning and design.

NCF

SO: Aeronautical Sciences and Aviation in the Soviet Union, Library of  
Congress, 1955.

ERSHOV, N. I.

USSR/Chemistry - Ethylene, Polymerization With Methylene Radicals  
Chemistry - Polymerization, Catalysts for

May 1948

"On the Condensation Action of Methylene Radicals on Ethylene," Ya. T. Lydus,  
Acad N. D. Zelinskiy, N. I. Ershov, 3 pp

"Dok Ak Nauk SSSR" Vol LX, No 4

Report of experiments on above subject, which led to discovery of new catalytic  
hydropolymerization of ethylene in presence of small quantities of carbon monoxide.  
Submitted 10 Mar 1948.

EA 77T1

10

CA

Catalytic hydrocondensation of carbon monoxide with olefins. VI. Hydrocondensation of carbon monoxide with normal butylene. Ya. T. Kaban, S. L. Kaban, M. I. Batur, and N. D. Zolotarev (Inst. Org. Chem., Acad. Sci. U.S.S.R., Moscow). *Izv. Akad. Nauk S.S.S.R., Khim. Nauk* 1951, 722-73; cf. *C.A.* 41, 3741a; 43, 108a; 45, 1405; 4437d. — An equimol. mixt. of H<sub>2</sub> and C<sub>4</sub>H<sub>8</sub> with 4-6% CO, passed at 190° under atm. pressure over the catalyst at a space velocity of 60-125 l./l. catalyst/hr., formed 635.8 ml./cu.m., or 63 ml./l. catalyst/hr. of liquid condensate. Examples of analyses are: With the initial composition of C<sub>4</sub>H<sub>8</sub> 37.0, H<sub>2</sub> 68.5, CO 6.1, H<sub>2</sub> 10.3 vol.-%, the outgoing gas was C<sub>4</sub>H<sub>8</sub> 3.3, H<sub>2</sub> 35.8, CO 0.0, C<sub>4</sub>H<sub>8</sub> 34.0, H<sub>2</sub> 24.0 vol.-%; reacted (in % of the unit of original component) C<sub>4</sub>H<sub>8</sub> 97.1, H<sub>2</sub> 74.2, CO 100%; C<sub>4</sub>H<sub>8</sub> formed (in % of the component reacted) from H<sub>2</sub> 32.4, C<sub>4</sub>H<sub>8</sub> 22.2, initial gas 42.7, 47.5, 2.6, 7.1, outgoing gas 40.0, 4.8, 0.0, 33.6, 18.4, reacted 70.4, 98.9, 100, C<sub>4</sub>H<sub>8</sub> formed 25.1, 38.3%. An example of the composition of the liquid (with 4.0 vol.-% CO, 100 l./l. catalyst/hr., 20 hrs.) is: total oil 511.0 ml./cu.m. (of which heavy oil 180.1, light oil 331.8), H<sub>2</sub>O 22.4, yield of total oil 47.3 ml./l. catalyst/hr. The condensate, freed from gas oil (C<sub>4</sub>), b. between 28 and 276° consists of aliphatic hydrocarbons, and contains about 28% of unsatd. compds. After hydrogenation, 77.8% of the liquid condensate b. between 24 and 152°; it consists of about 24% C<sub>8</sub> fraction (half of it isopentane), 15% C<sub>9</sub>, 8% C<sub>8</sub>, and 9% C<sub>7</sub>. N. Thor



ERSHOV, N. I.

USSR/Chemistry - Synthetic Fuels

Nov/Dec 51

"Catalytic Hydrocondensation of Carbon Monoxide With Olefins. VI. Hydrocondensation of Carbon Monoxide With n-Butene," Ya. T. Eydus, N. I. Ershov, M. I. Batuyev, N. D. Zelinskiy, Inst Org Chem, Acad Sci USSR

"I. Ak Nauk SSSR, Otdel Khim Nauk" No 6, pp 722-727.

Continuing investigation of reaction discovered by them in 1946, authors studied hydrocondensation of CO with n-butene at 190° and 1 atm in the presence of 4-6% CO and equimolar quantities of n-butene and H<sub>2</sub>. Yield of liquid condensate amounts to 635 ml/m<sup>3</sup> (or 55 ml/l per hr. 97% of n-butene react; 30-37% under formation of butene). The liquid condensate freed from gasol (C<sub>4</sub>) boils in the range 28-276°. It consists of paraffin hydrocarbons and 28% unsatd compds. On hydrogenation 77.5% of the liquid condensate distills between 28-152°. The compn then is 24 vol-% C<sub>5</sub> (half of it isopentane), 15% C<sub>6</sub>, 8% C<sub>8</sub>, 9% C<sub>9</sub>.

PA 197T7

1. EYDUS, Ya. T.; ERSHOV, N. I.
2. USSR (600)
4. Cyclohexane
7. Methylation of cyclohexane with methylene radicals, Dokl. AN SSSR, 87, No. 3, 1952.
9. Monthly List of Russian Accessions, Library of Congress, February, 1953. Unclassified.

YEDUS, Ya.T.; ZELINSKIY, N.D.; PUZITSKIY, K.V.; YERSHOV, N.I.

Catalytic hydrocondensation of carbon monoxide with olefins. VII. Effect of the concentration of carbon monoxide on its hydrocondensation with propylene and with butylene. Bull. Acad. Sci. U.S.S.R., Div. Chem. Sci. '52, 157-63 [Engl. translation]. (CA 47 no.19:9896 '53)

YERSHOV, N. I. ....

USSR/Chemistry - Hydrocondensation

Jan/Feb 52

"The Catalytic Hydrocondensation of Carbon Monoxide With Olefins. VII: Effect of the Concentration of Carbon Monoxide on Its Hydrocondensation With Propene and n-Butene," Ya. T. Sydus, N. D. Zelinskiy, K. V. Puzitskiy, N. I. Yershov, Inst of Org Chem, Acad Sci USSR

"Is Ak Nauk, Otdel Khim Nauk" No 1, 1952, pp 145-151

Hydrocondensation of propene-hydrogen and butene-hydrogen mixts does not occur in absence of CO. Reaction rate of Hydrocondensation of propene and butene is highest with 6-8% CO in the original gas mixt. If the original mixt contains 15-20% CO, hydrocondensation with propene and butene is sharply retarded, as distinguished from the same process carried out with ethylene.

208711

PERNOV, IV. I.

# CATALYSTS

Chemical Abst.  
Vol. 48 No. 3  
Feb. 10, 1954  
Organic Chemistry

3  
Methylation of cyclohexene by methylene radicals. Ya. T. Eskin and M. M. Brikman (Inst. Org. Chem., Acad. Sci. U.S.S.R., Moscow). *Doklady Akad. Nauk S.S.S.R.* 87, 433-6 (1952); *Chem. Abstr.* 46, 7287f. Hydrocondensation of olefins with  $H_2$  and CO to higher hydrocarbons was extended to cyclohexene (I). At  $190^\circ$ , on 15.5 g. of fresh catalyst (length 43 cm.), a mixt. 38.3 I, 7.0 CO, and 54.7%  $H_2$  was passed for 20 hrs. at a total space velocity of 120 l./l. catalyst/hr., velocity with respect to I was 0.20, and with respect to 11.4:88.6 CO- $H_2$  was 71 l./l./hr. The final contraction of the  $H_2$  + CO gas was 14%, and the compn. of the final gas, CO, 0.0,  $H_2$  75.1, CO 0.0,  $C_2H_4$  24.0% (ratio  $C_2H_4:CH_4 = 1:10$ ); 140.5 ml. I passed gave 138.2 ml. catalyzate (dry 110 ml.), fractionated into b.p. 35-72° (5.5 vol. %), 73-8° (3.0), 77-8° (32.9), 78-80° (14.6), 82-83° (4.5), 89-100° (3.0), 102-10° (2.2), 110-113° (2.2), 133-132° (0.1). At the same temp., with a mixt. I 42.7, CO 6.1,  $H_2$  51.2%, space velocity 112 (velocity for I 0.25, for CO 19.6;  $H_2$  80.4, 82 l./l./hr.), in 23 hrs., the final contraction of the  $H_2$  + CO gas was 48.5%, final gas compn.  $H_2$  93.9,  $C_2H_4$  1.2%, 230.7 g. I gave 229.0 g. liquid catalyzate, fractionated into b.p. 28-55° (1.5), 72-5° (1.6), 76-8° (31.5), 78.5-89° (48.0), 80-1° (8.2), 100-103° (0.6), residue (0.4). The fractions b. higher than the original I (above 82°, and below 133-132°) constitute 5-13 vol.-%. Analysis by Pt-catalyzed dehydrogenation showed these fractions to consist of methylated 6-membered cycles. The residue contains dimethyl derivs. in 1,4 position 1,2. Absence of 1,3 and 1,4-dimethyl derivs. proves that the  $CH_2$  radical is added to the C atom at the double bond. N. Thon

YERSHOV, N. I.

IA 245T13

USSR/Chemistry - Aromatic Hydrocarbons

21 Nov 52

"Methylation of Cyclohexene With the Methylene Radical," Ya. T. Eydus and N. I. Yershov, Inst of Organic Chem, Acad Sci USSR

"Dok Ak Nauk SSSR" Vol 87, No 3, pp 433-436

The catalytic hydrocondensation of cyclohexene and carbon monoxide is studied. It was found that methylation due to the action of  $H_2 + CO$  occurs in the 1 and 2 positions of cyclohexene. Presented by Acad B. A. Kazanskiy 19 Sep 52.

249T13

55 K

Catalytic hydrogenation of carbon monoxide with  
silanes. X. The behavior of cyclopentadiene in hydrogen  
dissociation. Ya. T. Litvin and A. I. Fuchter. 71





**"APPROVED FOR RELEASE: 03/15/2001**

**CIA-RDP86-00513R001962910006-7**

**APPROVED FOR RELEASE: 03/15/2001**

**CIA-RDP86-00513R001962910006-7"**

U S S R

✓Catalytic hydrocondensation of carbon monoxide with ethanol.  
XII. Hydrocondensation of carbon monoxide with hex-2-ene.

Ye. V. Endus, S. I. Yershov, and Ye. M. Terent'eva. XIII. Effects of varying the ratio of alkylenes to hydrogen in the initial gas, of dilution with nitrogen, and of varying the rate of flow on hydrocarbon concentration of carbon monoxide with ethylene. Ya. T. Eshut, K. V. Pustakili and I. V. Guseva (*Izvestia Akad. Nauk SSSR, Otdel Khim. Nauk*, 1954, 482-489, 190-197).—XII. The main product obtained when 1 : 3 hex-1-ene-H<sub>2</sub> mixtures are passed over an unsupported catalyst at 150° in n-C<sub>4</sub>H<sub>10</sub> (71%, yield) and at 0° (96% of higher  $\beta$ -hydrocarbons (C<sub>7</sub> or more). Mixtures of hex-1-ene hex-5-ene 55 : 91, C<sub>7</sub> : C<sub>8</sub> 7 and 11, 34 : 46%, also form products of higher hydrocarbons, and may be 30% yield).

11. The range of yields of oils from  $C_4H_9COOH$  increases from 1.5 to 1.8% are obtained with 3 vol. of  $C_4H_9$ . The oils are composed of saturated hydrocarbons in the main, the main component is the  $C_{12}H_{26}$  hydrocarbon (see Table 3). The boiling point of the oils with increasing reaction with  $C_4H_9$  decreases, the range of boiling points becomes narrower, the oils are more homogeneous, the color becomes lighter, the viscosity decreases, and the density increases. The oils are characterized as more stable to peroxidation when the ratio of  $C_4H_9$  to  $C_4H_9COOH$  is increased and the rate decreases when the ratio is decreased.

**"APPROVED FOR RELEASE: 03/15/2001**

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**APPROVED FOR RELEASE: 03/15/2001**

**CIA-RDP86-00513R001962910006-7"**

YERShov, N. I.

20-6-20/48

AUTHORS: YerShov, N. I., and Eydu, Ya. T.

TITLE: The Experimental Verification of the Chain-Mechanism of the Hydro-  
polymerization of Olefines, a Heterogeneous-Catalytic Reaction Pro-  
ceeding Under the Influence of Carbon Dioxide and Hydrogen (Ekspe-  
rimental'noye obosnovaniye tsepnogo mekhanizma geterogennokataliti-  
cheskoy reaktsii gidropolimerizatsii olefinov, protekayushchey pod  
vliyaniyem okisi ugleroda i vodoroda).

PERIODICAL: Doklady AN SSSR, 1957, Vol. 115, Nr 6, pp. 1126-1128 (USSR.).

ABSTRACT: The chain-reactions proceeding in space and being initiated by free  
atoms or by radicals are well known and have been thoroughly studied.  
But a direct and unequivocal experimental proof that this reaction  
may take place on the surface of a solid catalyst, is hitherto lacking.  
It was proved, indeed, that some reactions take place on solid cata-  
lysts according to the radical-mechanism, and a possibility of a  
heterogeneous-catalytic reaction was left open in theoretical works.  
The authors had earlier shown that the radicals forming in heteroge-  
neous-catalytic reductions of carbon-oxide by hydrogen are initiators  
of the hydropolymerization of olefines. It was interesting to deter-  
mine whether this reaction did not have a chain character. One of

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20-6-20/48  
The Experimental Verification of the Chain Mechanism of the Hydropolymerization of Olefines, a Heterogeneous-Catalytic Reaction Proceeding Under the Influence of Carbon Dioxide and Hydrogen.

the characteristic peculiarities of the homogeneous chain reactions of the polymerization of olefines, under the influence of free alkyl radicals, is the dependence of the chain length, or the yield in relation to the initiator, on the concentration of these radicals. It was observed that the yield in relation to the initiator increases with a decrease in the concentration of the free radicals. The heterogeneous-catalytic character of the reaction manifests itself in the influence exerted by the olefine adsorption on the reaction; The reaction only takes place when an adsorbed olefin exists on the catalyst. Carbon dioxide with its stronger inclination toward adsorption blocks up, e. g., the surface of the catalyst in the case of propylene. Thus the hydropolymerization reaction gets stuck at the surface due to the absence of olefines under the influence of carbon oxide and hydrogen reaction of olefines under the influence of carbon oxide and hydrogen represents a heterogeneous-catalytic reaction with a chain mechanism. The possibility of a proceeding of heterogeneous-catalytic reactions according to the radical - chain - mechanism was for the first time verified here by the example of this reaction. It is quite probable that the formation of hydro-carbons from CO and H<sub>2</sub> in a

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The Experimental Verification of the Chain-Mechanism of the 20-6-20/48  
Hydropolymerization of Olefines, a Heterogeneous-Catalytic Reaction Proceeding  
Under the Influence of Carbon Dioxide and Hydrogen.

related hydropolymerization reaction in a certain stage also proceeds according to the chain-radical mechanism. The initial state takes place under olefine-formation according to the radical mechanism (hydrocondensation). The hydropolymerization begins with the accumulation of olefines on the surface of the catalyst. It is complicated by a number of other reactions (hydrocracking, hydration etc.) and now proceeds according to the chain mechanism. The formation of hydrocarbons takes place in more complicated combinations of the radical with the chain-radical-mechanism. The authors further became convinced of the common character of the hydropolymerization and of the formation of hydrocarbons from CO and H<sub>2</sub>

by the fact that their dependence on temperature is identical and the nature of their reaction products is very similar. There are 1 figure and 9 Slavic references.

ASSOCIATION:

Institute for Organic Chemistry AN USSR Im.N.D.Zelinskiy (Institut organicheskoy khimii im.N.D.Zelinskogo Akademii nauk SSSR.).

Card 3/4

5(3)

AUTHORS:

Eydus, Ya.T., Yershov, N.I.

SOV/62-59-7-23/38

TITLE:

On the Catalytic Hydrocondensation of Carbon Monoxide With Olefines (O kataliticheskoy gidrokondensatsii okisi ugleroda s olefinami).  
XX. The Relation of 3-Methyl-Butene-1 to the Catalysis of Hydrocondensation (Sobshcheniye 20. Otnosheniye 3-metilbutena-1 k gidrokondensatsionnoy katalizu)

PERIODICAL:

Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1959, Nr 7, pp 1312 - 1317 (USSR)

ABSTRACT:

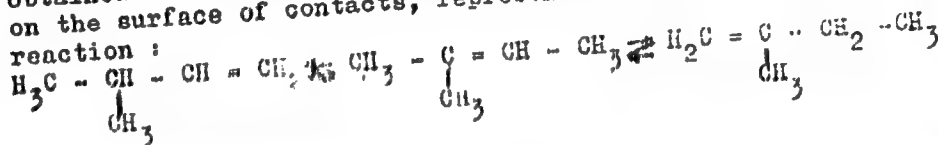
Following a preceding paper, the present article investigates the polycondensation of isopropyl-ethylene or 3-methyl-butene-1 in the presence of carbon monoxide. In the experimental part, the synthesis of 3-methyl-butene-1 is first described, as an initial product usual isoamyl alcohol was applied. The Raman spectrum from the obtained 3-methyl-butene-1 was recorded and applied for analysis by means of a cyclohexane scale. The apparatus used and the catalyst for the polycondensation are described in a preceding paper (Ref 1). The experiments were carried out in a continuously working apparatus at

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On the Catalytic Hydrocondensation of Carbon Monoxide SOV/62-59-7-23/38  
With Olefines. XX. The Relation of 3-Methyl-Butene-1 to the Catalysis  
of Hydrocondensation.

atmospheric pressure and a temperature of 190°. The yield  
of hydropolymerisate, which was obtained, was 500 ml/m<sup>3</sup>.  
The condensation of 3-methyl-butene-1 was investigated  
under normal conditions in the presence of carbon monoxide  
or in the presence of carbon monoxide and molecular  
hydrogen. The results are summarized in table 1. The  
constants of the two fractions are obtained listed in table 2.  
In the fractions 2-methyl-butane-1 and 2 methyl-butene-1  
was obtained beside 10 - 11 % hydropolymerisate and  
hydrocondensate. In a stream of hydrogen the yield became  
greater. 58 % were hydrogenated and 3 % were isomerized.  
In the presence of carbon monoxide and molecular hydrogen  
12 % of isomeres with a displaced double bond could be  
obtained in the steam of the initial olefines, which arise  
on the surface of contacts, represented in the following  
reaction :



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On the Catalytic Hydrocondensation of Carbon Monoxide With Olefines. XX. The Relation of 3-Methyl-Butene-1 to the Catalysis of Hydrocondensation SOV/62-59-7-23/38

The data are given in Tables 3-5. Five fractions were obtained. From the last fraction the Raman spectrum was registered and the substances were identified. Finally, the authors thank V.T. Aleksanyan and Kh.Ye. Sterin of the Laboratory of the Committee of Spectroscopy of the Academy of Sciences, USSR for carrying-out the measurement of Raman spectrum. There are 2 figures, 6 tables, and 5 references, 4 of which are Soviet.

ASSOCIATION: Institut organicheskoy khimii im. N.D. Zelinskogo Akademii nauk SSSR  
(Institute of Organic Chemistry imeni N.D. Zelinskiy of the Academy of Sciences, USSR)

SUBMITTED: November 1, 1957

Card 3/3

5 (3)

AUTHORS:

Eydus, Ya. T., Yershov, N. I.  
Guseva, I. V.

SOV/62-59-8-20/42

TITLE:

On the Catalytic Hydrocondensation of Carbon Monoxide With Olefines. Communication 23. On the Hydrocondensation of Carbon Monoxide With Ethylene on Fe- and Ni Catalysts

PERIODICAL:

Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1959, Nr 8, pp 1465-1470 (USSR)

ABSTRACT:

In the present paper an investigation is made of the possibility of polymerizing and hydropolymerizing ethylene and of hydrocondensating it with carbon monoxide on Ni- and Fe-Cu contacts as well as of the synthesis of hydrocarbons from CO and H<sub>2</sub>. For the investigation the contacts Fe-Cu-ThO<sub>2</sub>-K<sub>2</sub>CO<sub>3</sub> marschalite (100:25:2:2:125), described in reference 4, and Ni-Mn-Al<sub>2</sub>O<sub>3</sub> Kisatibi diatomite (100:20:10:100) (Ref 5), with minor changes, were used. Experiments on the Fe-contact were carried out at 250°, on the Ni-contact at 180°. Table 3 gives the results of the polymerization of C<sub>2</sub>H<sub>4</sub> on the Fe-contact. This contact is active for the synthesis of hydrocarbons from CO and H<sub>2</sub> but

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On the Catalytic Hydrocondensation of Carbon  
Monoxide With Olefines. Communication 23. On the Hydrocondensation of Carbon  
Monoxide With Ethylene on Fe- and Ni Catalysts

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inactive for the polymerisation of ethylene. It does not become active for polymerisation even after the synthesis of hydrocarbons. Table 4 gives the results of the hydropolymerization on contact 2. The activity of the contact with regard to the said reaction is rather small. The hydrocarbon yield did not exceed 9 ml/m<sup>3</sup>. Parallel investigations of the hydrocondensation of Co with C<sub>2</sub>H<sub>4</sub> in the presence of H<sub>2</sub> and the simultaneous synthesis of hydrocarbons from Co and H<sub>2</sub> on two Fe catalysts resulted in a 50-60 ml/m<sup>3</sup> yield of liquid hydrocarbons. Table 7 (polymerization and hydropolymerization of C<sub>2</sub>H<sub>4</sub> on two Ni catalysts) shows that this reaction cannot take place on Ni catalysts. Tables 8 and 9 give the results of the hydrocondensation of Co with C<sub>2</sub>H<sub>4</sub> on 3 Ni catalysts. The hydrocarbon yield from Co and H<sub>2</sub> was 110 ml/m<sup>3</sup>. The yield from the triple mixture CO-H<sub>2</sub>-C<sub>2</sub>H<sub>4</sub> was only 7-25 ml/m<sup>3</sup>. After this reaction the catalyst activity with regard to the hydrocarbon synthesis was

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On the Catalytic Hydrocondensation of Carbon  
Monoxide With Olefines. Communication 23. On the Hydrocondensation of Carbon  
Monoxide With Ethylene on Fe- and Ni Catalysts

30V/62-59-8-20/42

smaller. The reaction processes on the individual catalysts  
are explained. There are 9 tables and 5 references, 4 of which  
are Soviet.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii  
nauk SSSR (Institute of Organic Chemistry imeni N. D. Zelinskiy  
of the Academy of Sciences, USSR)

SUBMITTED: November 21, 1957

Card 3/3

5(3)

AUTHORS: Eydus, Ya. T., Yershov, N. I.

SOT/62-59-9-21/40

TITLE: On the Synthesis of Liquid Hydrocarbons From Carbon Monoxide and Hydrogen on a Mixed Cobalt-Nickel Catalyst

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1959, Nr 9, pp 1646-1648 (USSR)

ABSTRACT: In the present paper the precipitation contact  $\text{Co-Ni-Mn-ThO}_2\text{-Al}_2\text{O}_3\text{-kieselguhr}$  in the ratio 50:50:10:9:5:100 is for the first time used for the synthesis of liquid hydrocarbons from CO and  $\text{H}_2$ , and its mode of action investigated. The catalyst was prepared by precipitating the components from their nitrate solutions by precipitating with potassium carbonate. The investigation was carried out at 198°C. Apparatus, purification, analysis, and experimental arrangement are described in reference 5. The experimental results are given in the table. Two series of tests were made in which a series of various contacts was applied. (1). A gas mixture of 1 CO:1.67  $\text{H}_2$  was passed over the catalyst at a throughput rate of 96-114/hr. After a few hours the liquid hydrocarbons separated. As long as the catalyst was fully active,

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On the Synthesis of Liquid Hydrocarbons From Carbon  
Monoxide and Hydrogen on a Mixed Cobalt-Nickel Catalyst

S07/62-59-9-21/40

the yield amounted to 191.9 ml/m<sup>3</sup>. (2) Gas mixture 1 CO:2 H<sub>2</sub>.  
Maximum yield after some hours 169.1 ml/m<sup>3</sup>. In both experiments  
a large quantity of methane separated first. From this it is  
assumed, that the catalytic surface for the synthesis of liquid  
hydrocarbons is formed in the first stage, involving the  
formation of methane. In the course of the reaction the formation  
of methane decreases. There are 1 table and 5 references, 1 of  
which is Soviet.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk  
SSSR (Institute of Organic Chemistry imeni N. D. Zelinskiy of the  
Academy of Sciences, USSR)

SUBMITTED: November 21, 1957

Card 2/2

5(3)

AUTHORS:

Eydus, Ya. T., Yershov, N. I.

S07/62-59-9-22/40

TITLE:

On the Catalytic Hydrocondensation of Carbon Monoxide With Olefins Communication 24. On the Hydrocondensation of Carbon Monoxide With Ethylene on Cobalt-Nickel and Other Mixed Cobalt Catalysts

PERIODICAL:

Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1959, Nr 9, pp 1649-1654 (USSR)

ABSTRACT:

As had been shown previously, Co-catalysts can be used to advantage in the hydrocondensation of CO with ethylene, Ni-catalysts, however, only for the hydrogenation of  $C_2H_4$  to  $C_2H_6$  in the presence of CO. In the present paper an attempt is made to apply a mixed catalyst composed of CO and Ni, as well as Co-Fe and Co-Cu catalysts in the above hydrocondensation in the presence of  $H_2$  - CO and in the presence of  $H_2$  only. The mixed Co-Ni catalyst contained Mn,  $ThO_2$ , and  $Al_2O_3$  in addition to the two main components. Apparatus, purification, method of gas analysis, and procedure do not differ from those applied in the investigations described in references 1, 2. Results of the various

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On the Catalytic Hydrocondensation of Carbon Monoxide SOV/62-59-9-22/40  
With Olefins Communication 24. On the Hydrocondensation of Carbon Monoxide With  
Ethylene on Cobalt-Nickel and Other Mixed Cobalt Catalysts

polymerization and hydrocondensation reactions described in detail in the experimental part of the paper are given in tables 1-5. From the data obtained, the following findings are stressed: As was to be expected, the hydrocondensation of CO + ethylene proceeded best on a pure Co catalyst in the presence of slight amounts of Co. The formation of hydrocarbons from CO and H<sub>2</sub> was also effected by Fe and Ni catalysts. Good yields were obtained in the formation of hydrocarbons from CO, H<sub>2</sub>, and ethylene on mixed catalysts. Thus, apart from depending on the initial concentration of the substances investigated, the type of catalytic reaction also depends on the properties of the catalyst. At various concentration ratios of the initial substances the basic materials CH<sub>3</sub> or CH<sub>2</sub> can be formed (as surface radicals), which may then influence the further reaction. According to their effect the catalysts may be divided into condensing and hydrogenating catalysts. Ni catalysts hydrogenate olefins to form paraffins,

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On the Catalytic Hydrocondensation of Carbon Monoxide SOV/62-59-9-22/40  
With Olefins Communication 24. On the Hydrocondensation of Carbon Monoxide With  
Ethylene on Cobalt-Nickel and Other Mixed Cobalt Catalysts

Co-Ni catalysts have an essentially condensing effect, but owing to their Ni content also a hydrogenating effect: Thus, hydrocarbons are formed from CO, H<sub>2</sub>, and olefins but if the CO concentration is low hydrocondensation ensues. Co-Fe and Co-Cu catalysts have a good hydrogenating effect only. There are 5 tables and 5 Soviet references.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk  
SSSR (Institute of Organic Chemistry imeni N. D. Zelinskiy of the  
Academy of Sciences, USSR)

SUBMITTED: December 12, 1957

Card 3/3

5(3)

AUTHORS:

Eydus, Yu. T., Yerшов, N. I.

507/62-59-9-23/40

TITLE:

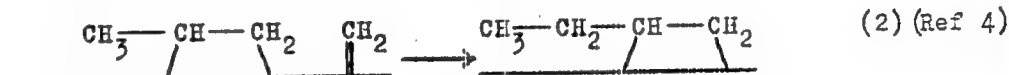
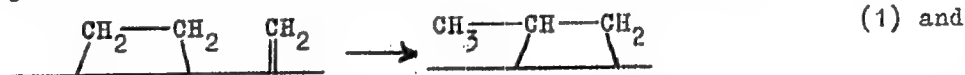
On the Mechanism of Catalytic Hydropolymerization of Olefins Under the Action of Small Quantities of Carbon Monoxide in the Presence of Hydrogen

PERIODICAL:

Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1959, Nr 9, pp 1655-1662 (USSR)

ABSTRACT:

In the present paper a detailed investigation is made on the strength of data given in publications as well as in papers by the authors concerning the mechanism of catalytic hydropolymerization of olefins in the presence of hydrogen under the action of small quantities of CO. It is known that  $\text{CH}_2$  radicals and olefins adsorbed to the catalyst interact in the presence of large quantities of CO to form the next higher homologs

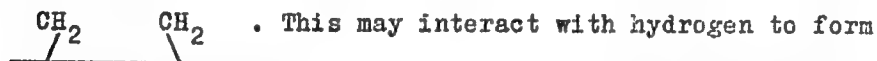
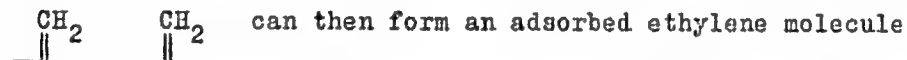
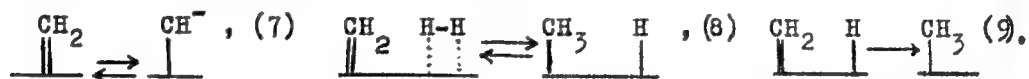
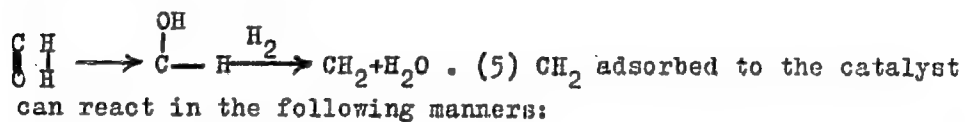


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A similar representation is given in reference 3: It is assumed to be adsorbed to the catalyst, initiating hydropolymerization by reacting with partially hydrogenated olefins. However, this representation does not give all the reaction processes involved. It must be assumed that the initiating centres consist of particles formed by



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paraffin radicals, or with other olefin radicals to yield alkyl radicals and atomic hydrogen. Olefin and atomic hydrogen also forms alkyl radicals. (13). This reaction was first described by Polanyi (Ref 18). Of the olefin radicals only  $\text{CH}_2$  is able to enter into reaction with the next higher homolog and give a higher homolog, other radicals do not react. Alkyl radicals, however, are much more reactive. They must be formed together with the adsorbed olefins by  $\text{CH}_2$  (formed by CO and H), and react with the olefin radicals, thus yielding higher alkyl radicals (15). The alkyl radicals themselves can give the following reactions: combining in pairs to give paraffin hydrocarbons, formation of paraffins with H, decomposition to adsorbed H and olefin (13). In the last reaction all possible isomers of this olefin may be formed, addition to an adsorbed olefin radical (15). Reaction with an  $\text{H}_2$  molecule and formation of a paraffin molecule.

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Decomposition and formation of smaller alkyl radicals plus adsorbed olefins (19). This is especially the case with larger

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and less stable alkyl radicals. Both the reaction (15) and (19) are reversible. This is verified by the formation of olefins in hydropolymerization having a higher and lower number of carbon atoms. The mechanism of the catalytic hydropolymerization of olefins in the presence of hydrogen with small quantities of CO as initiator is based on the reactions (5), (8), (15), and (19). There are 27 references, 21 of which are Soviet.

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SUBMITTED: November 21, 1957

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### Reaction of $\alpha$ -Olefins with $\text{Co}(\text{C}_5\text{H}_5)_2$ in the Presence of Hydrogen

5.3300, 5.1190

78074  
SOV/G2-60-1-20/3

AUTHORS: Eyduş, Ya. T., Puzitskiy, K. V., Veranov, N. I.,  
Kazanskiy, B. A.

TITLE: Catalytic Polymerization of Olefines. Communication  
III. Concerning the Activity of Nickel Monoxide-Silica  
Gel Catalyst in Ethylene Polymerization

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh  
nauk, 1960, Nr 1, pp 111-114 (USSR)

ABSTRACT: From 15 silica gel brands (ASM, ASK, KSK, ShSK, ShSM,  
MSM, KSM) only the brand KSK was found suitable for  
the preparation of active NiO-containing catalysts.  
KSK alone showed no catalytic properties with respect  
to ethylene polymerization. The activity of NiO-KSK  
catalysts prepared from various KSK samples was not  
uniform and showed wide variations. This could be  
explained by the presence of  $Al_2O_3$  impurities which  
imparted catalytic properties to silica gel. This  
will be discussed in future studies. There are 4

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Catalytic Polymerization of Olefines.  
Communication III

78078

SOV/62-60-1-20/37

tables; and 9 references, 3 U.S., 3 Japanese, 3 Soviet. The 3 U.S. references are: H. D. Foster, Industr. & Engng. Chem., 29, 1254 (1937); F. H. Gayer, *ibid.*, 25, 1122 (1933); S. J. Hetzel, R. M. Kennedy, Chem. Abstr., 43, 1218, 5640 (1949).

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SUBMITTED: May 4, 1958

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5.1190, 5.3300

78076  
SOV/62-60-1-22/37

AUTHORS: Eydus, Ya. T., Yershov, N. I.

TITLE: Concerning the Catalytic Hydrocondensation of Carbon Monoxide with Olefins. Communication XXVI. The Effect of the Addition of Metal Oxides on the Activity of Cobalt-Kieselguhr (Kisatibi) Catalyst in Hydrocondensation of Carbon Monoxide with Ethylene and Hydropolymerization of the Latter with Carbon Monoxide

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1960. Nr 1, pp 120-124 (USSR)

ABSTRACT: The condensation of  $C_2H_4 + H_2$  (1:0.8) mixtures containing 5-6% CO over cobalt-kieselguhr catalyst with and without addition of various condensation-promoting agents was investigated. The reaction of pure Co-kieselguhr catalyst proceeded chiefly in the direction of the hydrogenation of ethylene to ethane (up to 70%, based on reacted ethylene). The addition of MgO to the catalyst practically did not change the direction of the reaction.

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Concerning the Catalytic Hydrocondensation of  
Carbon Monoxide with Olefins. Communication  
XXVI

78076  
SOV/62-60-1-22/37

The simultaneous addition of MnO and  $Al_2O_3$  reduced the activity and the stability of the catalyst. The addition of  $V_2O_5$  (Co- $V_2O_5$ -kieselguhr in 1:0.02-0.06:1 ratio) increased the condensing properties and lowered the hydrogenating properties of the catalyst as was evidenced by the reduced relative yield of the  $C_3 + C_4$  fraction, and the reduced yield of ethane. There are: 4 tables; and 5 references, 1 U.S., 4 Soviet. The U.S. reference is: C. H. Riesz, F. Lister, L. G. Smith, V. I. Komarevsky, Industr. & Engng. Chem., 40, 718 (1948).

ASSOCIATION: N. D. Zelinskiy Institute of Organic Chemistry, Academy of Sciences USSR (Institut organicheskoy khimii imeni N. D. Zelinskogo Akademii nauk SSSR)

SUBMITTED: May 21, 1958

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BYDUS, Ya.T.; YERSHOV, N.I.; PUZITSKIY, K.V.; GUSEVA, I.V.

Catalytic hydrocondensation of carbon monoxide with olefins.  
Report No.28: Activity of the cobalt - clay contact in the  
hydrocondensation of carbon monoxide with ethylene and polymeri-  
zation of the latter under the influence of carbon monoxide. Izv.  
AN SSSR Otd.khim.nauk no.5:913-919 My '60.  
(MIRA 13:6)

1. Institut organicheskoy khimii imeni N.D. Zelinskogo Akademii  
nauk SSSR.  
(Carbon monoxide) (Ethylene) (Catalysts)